

Claims

We claim the following:

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1. A method of moving data between zones of a central processing complex, said method comprising:

5 initiating a move of data from one zone of said central processing complex to another zone of said central processing complex; and

10 moving said data from said one zone to said another zone without using a channel interface and without using processor instructions.

2. The method of claim 1, wherein said data comprises at least one of a command, a response and one or more data areas.

15 3. The method of claim 1, wherein said one zone is one of an operating system zone and a coupling facility zone and said another zone is the other of said operating system zone and said coupling facility zone.

20 4. The method of claim 1, wherein said moving is performed by a data mover located within said central processing complex and coupled to said one zone and said another zone.

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5. The method of claim 4, wherein said initiating comprises instructing said data mover to perform the move.

6. The method of claim 4, wherein said data mover comprises a fetch state machine and a store state machine 5 employed in moving said data.

7. The method of claim 1 further comprising determining whether said another zone is ready for the move, wherein the move does not take place until said another zone is ready.

10 8. The method of claim 7, wherein said determining comprises determining whether said another zone is ready to receive a command from said one zone, wherein the move does not take place until said another zone is ready to receive the command.

15 9. The method of claim 7, wherein said determining comprises checking a buffer to determine whether said another zone is ready.

10. The method of claim 9, wherein said buffer is of a data mover used for said moving.

20 11. The method of claim 1, wherein said moving comprises determining whether said another zone is ready to receive one or more data areas of said data, prior to moving the one or more data areas from said one zone to said another zone.

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12. The method of claim 11, wherein said determining comprising determining whether a predefined command is received from said one zone and said another zone by a data mover employed to perform the move, wherein receipt of the
5 predefined command from said one zone and said another zone indicates said another zone is prepared to receive the one or more data areas.

13. The method of claim 1, wherein said moving
10 comprises:

fetching data from a main memory of said one zone using one or more fetch memory requests generated by a fetch state machine; and

15 storing the fetched data in a main memory of said another zone using one or more store memory requests generated by a store state machine.

14. The method of claim 13, further comprising placing said fetched data in one or more line buffers, which are used by said store state machine to generate the one or more
20 store memory requests.

15. The method of claim 13, wherein at least one of said one or more fetch memory requests and said one or more store memory requests is generated using information retrieved from an array coupled to at least one of said
25 fetch state machine and said store state machine.

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16. The method of claim 13, wherein said fetching comprises processing by said main memory of said one zone said one or more fetch memory requests to fetch said data, wherein one or more responses by said main memory of said one zone to said one or more fetch memory requests are not necessarily in a same order as receipt of the one or more fetch memory requests.

17. The method of claim 13, further comprising tracking progress of the fetching of the data and the storing of the fetched data.

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18. A method of moving data between zones of a central processing complex, said method comprising:

5 moving data from one zone of said central processing complex to another zone of said central processing complex, wherein said moving comprises:

creating one or more queue entries associated with a message requesting the move;

10 generating one or more fetch memory requests for said one or more queue entries to fetch the data from a memory of said one zone;

using the one or more fetch memory requests to fetch the data from the memory of said one zone;

placing the fetched data in one or more line buffers;

15 generating one or more store memory requests using the fetched data placed in the one or more line buffers; and

20 employing the one or more store memory requests to store the fetched data in a memory of said another zone.

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19. The method of claim 18, wherein said moving is performed by a data mover located within said central processing complex and coupled to said one zone and said another zone.

5 20. The method of claim 19, wherein said data mover comprises control logic to perform the creating, and a queued memory line mover to perform the generating of one or more fetch memory requests, the placing of the fetched data in one or more line buffers, and the generating of one or
10 more store memory requests.

A1 21. A system of moving data between zones of a central processing complex, said system comprising:

5 means for initiating a move of data from one zone of said central processing complex to another zone of said central processing complex; and

means for moving said data from said one zone to said another zone without using a channel interface and without using processor instructions.

10 22. The system of claim 21, wherein said data comprises at least one of a command, a response and one or more data areas.

15 23. The system of claim 21, wherein said one zone is one of an operating system zone and a coupling facility zone and said another zone is the other of said operating system zone and said coupling facility zone.

24. The system of claim 21, wherein said means for moving comprises a data mover located within said central processing complex and coupled to said one zone and said another zone.

20 25. The system of claim 24, wherein said means for initiating comprises means for instructing said data mover to perform the move.

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26. The system of claim 24, wherein said data mover comprises a fetch state machine and a store state machine employed in moving said data.

27. The system of claim 21, further comprising means 5 for determining whether said another zone is ready for the move, wherein the move does not take place until said another zone is ready.

28. The system of claim 27, wherein said means for determining comprises means for determining whether said 10 another zone is ready to receive a command from said one zone, wherein the move does not take place until said another zone is ready to receive the command.

29. The system of claim 27, wherein said means for determining comprises means for checking a buffer to 15 determine whether said another zone is ready.

30. The system of claim 29, wherein said buffer is of a data mover used for said moving.

31. The system of claim 21, wherein said means for moving comprises means for determining whether said another 20 zone is ready to receive one or more data areas of said data, prior to moving the one or more data areas from said one zone to said another zone.

A/ 32. The system of claim 31, wherein said means for determining comprising means for determining whether a predefined command is received from said one zone and said another zone by a data mover employed to perform the move,
5 wherein receipt of the predefined command from said one zone and said another zone indicates said another zone is prepared to receive the one or more data areas.

33. The system of claim 21, wherein said means for
10 moving comprises:

means for fetching data from a main memory of said one zone using one or more fetch memory requests generated by a fetch state machine; and

15 means for storing the fetched data in a main memory of said another zone using one or more store memory requests generated by a store state machine.

34. The system of claim 33, further comprising means for placing said fetched data in one or more line buffers, which are used by said store state machine to generate the
20 one or more store memory requests.

35. The system of claim 33, wherein at least one of said one or more fetch memory requests and said one or more store memory requests is generated using information retrieved from an array coupled to at least one of said
25 fetch state machine and said store state machine.

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36. The system of claim 33, wherein said means for
fetching comprises means for processing by said main memory
of said one zone said one or more fetch memory requests to
fetch said data, wherein one or more responses by said main
5 memory of said one zone to said one or more fetch memory
requests are not necessarily in a same order as receipt of
the one or more fetch memory requests.

37. The system of claim 33, further comprising means
for tracking progress of the fetching of the data and the
10 storing of the fetched data.

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38. A system of moving data between zones of a central processing complex, said system comprising:

5 means for moving data from one zone of said central processing complex to another zone of said central processing complex, wherein said means for moving comprises:

means for creating one or more queue entries associated with a message requesting the move;

10 means for generating one or more fetch memory requests for said one or more queue entries to fetch the data from a memory of said one zone;

means for using the one or more fetch memory requests to fetch the data from the memory of said one zone;

15 means for placing the fetched data in one or more line buffers;

means for generating one or more store memory requests using the fetched data placed in the one or more line buffers; and

20 means for employing the one or more store memory requests to store the fetched data in a memory of said another zone.

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39. The system of claim 38, wherein said means for moving comprises a data mover located within said central processing complex and coupled to said one zone and said another zone.

5 40. The system of claim 39, wherein said data mover comprises control logic to perform the creating, and a queued memory line mover to perform the generating of one or more fetch memory requests, the placing of the fetched data in one or more line buffers, and the generating of one or
10 more store memory requests.

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41. A system of moving data between zones of a central processing complex, said system comprising:

one zone of said central processing complex and another zone of said central processing complex; and

5 a data mover coupled to said one zone and said another zone to move data from said one zone to said another zone without using a channel interface and without using processor instructions.

42. The system of claim 41, wherein said one zone is
10 one of an operating system zone and a coupling facility zone and said another zone is the other of said operating system zone and said coupling facility zone.

43. The system of claim 41, wherein said data mover
15 comprises a fetch state machine and a store state machine employed in moving said data.

44. The system of claim 43, wherein said fetch state machine generates one or more fetch memory requests to fetch data from a main memory of said one zone, and wherein said store state machine generates one or more store memory
20 requests to store the fetched data in a main memory of said another zone.

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46. A system of moving data between zones of a central processing complex, said system comprising:

5 a data mover to move data from one zone of said central processing complex to another zone of said central processing complex, wherein said data mover comprises:

one or more queue entries associated with a message requesting the move;

10 a fetch state machine to generate one or more fetch memory requests for said one or more queue entries to fetch the data from a memory of said one zone;

one or more line buffers coupled to said fetch state machine to receive the fetched data; and

15 a store state machine coupled to said one or more line buffers to generate one or more store memory requests using the fetched data of the one or more line buffers, wherein the one or more store memory requests are used to store the
20 fetched data in a memory of said another zone.

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